CLAIMS

What is claimed is:

1. A system comprising:

a compiler to compile a computer program , the compiler forming optimized code regions to improve performance of the computer program by optimizing frequently executed code and using compiler transformation and hardware support to handle infrequently executed code;

a memory to store the compiler;

a central processing unit (CPU) cooperatively connected to the memory to run the compiler and to speculatively execute the optimized code regions;

a store buffer connected to the CPU to improve the speed at which the CPU speculatively executes the optimized code regions.

2. The system of claim 1, wherein the store buffer assists the CPU in speculatively executing the optimized code regions by temporarily storing results produced during the speculative execution of the optimized code regions.

3. The system of claim 1, wherein the compiler improves performance of the computer program by applying standard available optimizations.

4. The system of claim 1, wherein the compiler improves performance of the computer program by selecting a seed block, duplicating the seed block, and growing the seed block to form a region.

5. The system of claim 4, wherein the compiler improves performance of the computer program by trimming blocks near a head block of the region to form a trimmed region having improved scheduling cycles.

6. The system of claim 4, wherein the compiler improves performance of the computer program by trimming blocks near a tail block of the region to form a trimmed region having improved scheduling cycles.

7. The system of claim 4, wherein the compiler improves performance of the computer program by updating a branch frequency for an original code corresponding to the region to form an improved region.

8. A method comprising:

compiling a computer program;

improving performance of the computer program by optimizing frequently executed code and using compiler transformation and hardware support to handle infrequently executed code;

storing temporarily the results produced during execution of formed regions to handle infrequent code being actually executed;

committing the results produced when the execution of the region is completed successfully.

9. The method of claim 8, wherein the improving performance of the computer program further includes applying standard available optimizations to the formed regions.

10. The method of claim 8, wherein the improving performance of the computer program further includes selecting a seed block, duplicating the seed block, and growing the seed block to form a region.

11. The method of claim 10, wherein the improving performance of the computer program further includes trimming blocks near a head block of the region to form a trimmed region of having improved scheduling cycles.

12. The method of claim 10, wherein the improving performance of the computer program further includes trimming blocks near a tail block of the region to form a trimmed region having improved scheduling cycles.

13. The method of claim 10, wherein the improving performance of the computer program further includes updating a branch frequency for an original code corresponding to the region to construct an improved region.

14. A machine-readable medium comprising instructions which, when executed by a machine, cause the machine to perform operations comprising:

compiling a computer program;

improving performance of the computer program by optimizing frequently executed code and using compiler transformation and hardware support to handle infrequently executed code;

storing temporarily the results of produced during execution of a region to improve performance of the computer program; and

committing the results produced when the execution of the region is completed successfully.

15. The machine-readable medium of claim 14, wherein the improving performance of the computer program further includes applying standard available optimizations.

16. The machine-readable medium of claim 14, wherein the improving performance of the computer program further includes selecting a seed block, duplicating the seed block, and growing the seed block to form a region.

17. The machine-readable medium of claim 16, wherein the improving performance of the computer program further includes trimming blocks near a head block of the region.

18. The machine-readable medium of claim 16, wherein the improving performance of the computer program further includes trimming blocks near a tail block of the region.

19. The machine-readable medium of claim 16, wherein the improving performance of the computer program further includes updating a branch frequency for a original code corresponding the region.